

## Clean Energy Systems Mendota Class VI Project

### UIC Class VI Regulations Background

- In December 2010, EPA published federal requirements under the Underground Injection Control (UIC) Program for Class VI wells (final Class VI Rule). Class VI wells are used to inject carbon dioxide (CO<sub>2</sub>) into deep rock formations. This long-term underground storage is called geologic sequestration (GS).
- Class VI well requirements are designed to protect underground sources of drinking water (USDWs) and address GS well siting, construction, operation, testing, monitoring, and closure. EPA developed specific criteria for Class VI wells including:
  - Extensive site characterization requirements
  - Injection well construction requirements for materials that are compatible with and can withstand contact with CO<sub>2</sub> over the life of a GS project
  - Injection well operation requirements
  - Comprehensive monitoring requirements that address all aspects of well integrity, CO<sub>2</sub> injection and storage, and ground water quality during the injection operation and the post-injection site care period
  - Financial responsibility requirements assuring the availability of funds for the life of a GS project (including post-injection site care and emergency response)
  - Reporting and recordkeeping requirements that provide project-specific information to continually evaluate Class VI operations and confirm USDW protection
- The regulations address the unique nature of CO<sub>2</sub> injection for GS, including the relative buoyancy of CO<sub>2</sub>, subsurface mobility, corrosivity in the presence of water, and the large injection volumes anticipated at GS projects.

### CES Mendota Project Overview

- Clean Energy Systems (CES) proposes to convert a former biomass power plant located in Mendota, California (35 miles west of Fresno, CA) into a carbon negative energy (CNE) plant.
- The Mendota CNE plant gasifies local biomass wastes to produce syngas, which is then used to produce renewable hydrogen and electricity. The CO<sub>2</sub> produced during the electricity generation will be captured and injected underground via a Class VI well for geologic sequestration.
- The anticipated CO<sub>2</sub> mass to be captured and injected at the project is 350,000 tons/year over a period of twelve years (4.2 million tons total) to 20 years (7 million tons total).

### Current EPA Review Status

- On February 18, 2020, CES submitted an UIC Class VI application for one injection well. This is R9's first UIC Class VI application but not the first in the nation.
- ~~There is a high level of interest by CA state agencies; R9 is coordinating closely with the State Board and CalCEM on the technical review.~~

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- On March 20, 2020, R9 determined the permit application to be administratively complete and began the technical evaluation of the proposed GS injection project.
- On August 19, 2020, R9 provided CES with an initial the first set of technical evaluation comments, which pertain to the site characterization information submitted as part of the permit application.
- October 2020: R9 expect to issue additional comments that address deficiencies in the following four areas:

**Commented [TT1]:** Clarify what administratively complete means (that required 'components' were submitted but substance was not reviewed)

**Commented [TT2]:** Include the four areas as you described previously

*There are four topic areas where we have questions, or we are seeking clarification and additional information. These four areas are: 1) geologic site characterization (details of the geology/hydrogeology of the site and the nearby area to assess whether long-term injection/sequestration of CO2 can be safely and effectively carried out at the proposed site); 2) financial responsibility and their Emergency & Remedial Response Plan; 3) conceptual modeling of the area of review and their proposed operating procedures (complex computational modeling of the long-term behavior of the CO2 plume in the subsurface is required of the applicant and is carefully reviewed for technical sufficiency); and 4) numerous Proposed Plans, including a Testing and Monitoring Plan and a Construction and Plugging Plan. It's hard to put a label on the "degree" of deficiency, but if I had to characterize it, I would say lightly to moderately deficient overall. Across the four information requests, we are identifying over 150 items for them to address. Of course, these range from minor to significant. See the attached letter on the first topic area - geologic site characterization...*

- is preparing three more sets of technical evaluation comments on various sections of the application:
  - Comments on Financial Responsibility, and Emergency & Remedial Response Plan
  - Comments on Area of Review Modeling, and Operating Procedure
  - Comments on Testing & Monitoring Plan, and Construction & Plugging Plan
- R9 plans to make a preliminary decision on the permit and seek public comment in Spring early 2021. We are not aware of public concerns about the project.
- R9 expects to make a final permit decision by the end of FY2021.
- [Add bullet on overall interaction and engagement with the applicant]
- [Add bullet on close coordination with California]
- There is a high level of interest by CA state agencies; R9 is coordinating closely with the State Board and CalGEM on the technical review.

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